ORIGINAL ARTICLE

# Use of a comprehensive survey as a first step in addressing clinical competence of physicians-in-training in the management of pain

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## ABSTRACT

*Deficiencies in practice, knowledge, and competence among physicians are important contributing factors to the unsatisfactory level of analgesic care in hospitalized patients. By way of a comprehensive survey, we characterized these deficiencies within an internal medicine residency program as an initial step in designing remedial educational strategies. To do so, an anonymous 43-item survey was administered to residents in an internal medicine program. A total of 61 residents (69 percent) responded.*

*The results indicated that patient-controlled analgesia (PCA), a standardized pain scale, and an opioid equivalence table were underused. Competence in opioid conversion was suboptimal, but completion of an oncology rotation and familiarity with the opioid equivalence table predicted greater competence in this area ($p = 0.007$ and $p = 0.001$, respectively).*

*Self-perceptions of adequacy of training and pain-management competence were predictors of knowledge ($p = 0.026$ and $p = 0.038$, respectively). Attitudes regarding opioid analgesia were generally satisfactory (i.e., low "opiophobia" score), although the risk of addiction was still overestimated.*

*The characterization of deficiencies in pain management in a residency program is an essential step in the design and implementation of educational interventions. Administration of a comprehensive survey is a simple and effective method of gathering this data and has the additional benefit of promoting awareness of pain management issues. Our experience served to establish, among other findings, the didactic value of experience on an oncology floor; this result substantiates the value of practical experience in the gaining of clinical competence in pain management. Interventions that capitalize on the findings of the survey and the interest in pain management generated by its administration are currently ongoing at our institution.*

*Key words: education, opioid analgesia, pain management, survey*

## INTRODUCTION

Pain management has for many years been recognized as an area of clinical care in need of improvement.[1] Despite the availability of an effective armamentarium of analgesic drugs and techniques, an unacceptably high percentage of patients in the inpatient[2-7] and ambulatory settings[4,7-9] report unrelieved pain. Explaining and dealing with this inconsistency is a vexing issue that over the last few years has generated much discussion.[10-12] Numerous "barriers" to effective pain management have been identified, with the burden of responsibility being shared by a wide spectrum of involved parties including healthcare professionals,[13-16] patients,[2,17] medical educators,[18-20] and government regulatory agencies.[21]

The last decade has seen a number of initiatives aimed at improving pain management, with several guidelines published that stipulate appropriate standards of pain care in hospitals.[22-24] Most recently, the Joint Commission for the Accreditation of Hospital Organizations (JCAHO) has made available a comprehensive set of standards governing pain management to which all accredited facilities will be expected to adhere.[25]

The limitations and shortcomings of previous attempts to improve analgesic care that focused solely on physician education and the changing of attitudes regarding opioid analgesia have been recognized.[10] Accordingly, the focus of more recent initiatives has been to bring about changes on an institutional level, with the implementation of quality improvement programs. Issues such as patient empowerment and the implementation of nursing protocols that are more efficient at identifying and assessing pain have been prominent in recent guidelines.[26-28]

Nevertheless, the role of physicians in the process should not be overlooked or underestimated. Good evidence exists that pain management skills, knowledge, and perceptions are deficient in a broad range of physician populations,[15,29-32] and our perception was that the

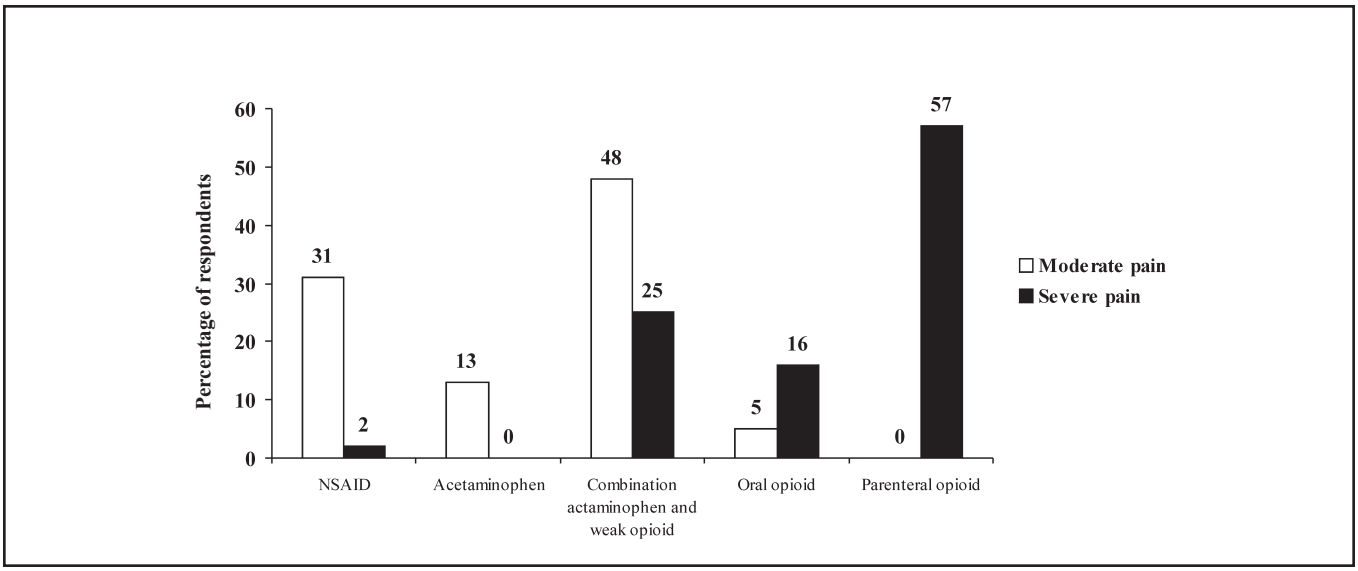


**Figure 1. Choice of analgesic agents for moderate and severe pain.**

internal medicine resident house staff at our institution was no exception.

After discussion with interested attending physicians, pharmacists, nurses, and residents, a survey was designed to study and quantify various aspects of resident pain management that were perceived to be poor. Our focus was to glean information that would be of use in the design and implementation of future remedial interventions. We sought to identify any correlation between measured performance variables and various resident subgroups, information that would be useful in evaluating the strengths and weaknesses in the pain education component of our residency program at baseline. In addition, we wished to qualitatively evaluate residents' subjective perceptions regarding their training and competence in analgesia.

## MATERIALS AND METHODS

### Sample selection

A 43-item questionnaire (Appendix 1) was made available to all internal medicine residents at Albert Einstein Medical Center, a teaching hospital in urban Philadelphia. Participation was voluntary, and completed surveys were submitted anonymously.

### Survey design

Following discussion with clinicians, pharmacists, quality improvement officers, and residents at the institution, various aspects of pain management practice, competence, and perception were identified that warranted study. Published guidelines pertinent to institutional standards of analgesic care, specifically those of the American Pain Society and of JCAHO,[22,25] were made use of during this initial planning process and influenced the focus of the survey. The medical literature was searched for similar studies, and specifically for previously validated tools that would be useful in studying the identified areas of interest.

### Variables

The questionnaire contained sections on the following:

- Pain management practices: Documentation of pain, use of a pain scale, compliance with the World Health Organization (WHO) "analgesic ladder" guidelines, use of patient-controlled analgesia (PCA), and use of an opioid equivalence table were surveyed.

- Reluctance to prescribe opioids: Items were selected from a previously published study measuring "opiophobia" in practicing physicians.[29] Respondents indicated their level of agreement with six statements concerning the appropriateness of narcotic analgesia in various settings. A 7-point Likert scale was used.

- Knowledge about pain and its treatment: Residents' knowledge was assessed using 14 true-or-false questions. Of these questions, 13 had been used in a previous study.[29]

- Opioid conversion skills: A simple clinical scenario was presented and respondents were asked to indicate correct dosage and duration for various opioid substitutions. This section was

**Table 1. Demographics and performance in knowledge and opioid conversion**

| | | | Number (percent) | Knowledge score (percent)[a] | p value | Opioid conversion score[b] | p value[c] |
|---|---|---|---|---|---|---|---|
| All residents | | | 61 (100) | 66.4 | | 2.30 | |
| Year of training | | PGY1 | 31 (50.8) | 65.7 | 0.357 | 2.29 | 0.920 |
| | | PGY2 | 15 (24.6) | 65.7 | | 2.20 | |
| | | PGY3/4 | 15 (24.6) | 68.6 | | 2.40 | |
| Gender | | Male | 38 (62.3) | 69.7 | 0.040 | 2.34 | 0.638 |
| | | Female | 23 (37.7) | 60.9 | | 2.22 | |
| Place of training | | American graduate | 20 (32.8) | 65.7 | 0.824 | 2.15 | 0.567 |
| | | International graduate | 41 (67.2) | 66.7 | | 2.37 | |
| Self-perception regarding adequacy of training | | Adequate | 26 (42.6) | 72.3 | 0.026 | 2.46 | 0.344 |
| | | Inadequate | 31 (51.9) | 62.4 | | 2.19 | |
| Self-perception regarding competence | | Competent | 26 (42.7) | 70.9 | 0.038 | 2.54 | 0.209 |
| | | Incompetent | 26 (42.7) | 61.3 | | 2.15 | |
| Completion of oncology rotation | All residents | Yes | 33 (54.1) | 69.0 | 0.174 | 2.67 | 0.007 |
| | | No | 28 (45.9) | 63.3 | | 1.86 | |
| | PGY1 | Yes | 8 (25.8) | 72.3 | 0.050 | 3.25 | 0.008 |
| | | No | 23 (74.2) | 63.4 | | 1.96 | |
| | PGY2 | Yes | 13 (86.7) | 67.0 | 0.484 | 2.46 | 0.044 |
| | | No | 2 (13.3) | 57.1 | | 2.20 | |
| | PGY3/4 | Yes | 12 (80.0) | 69.0 | 0.843 | 2.50 | 0.503 |
| | | No | 3 (20.0) | 66.7 | | 2.40 | |
| Familiarity with opioid equivalence table | | Yes | 45 (73.8) | 67.3 | 0.475 | 2.58 | 0.001 |
| | | No | 16 (26.2) | 63.8 | | 1.50 | |
| Personal experience of pain | | Yes | 10 (16.3) | 70.0 | 0.453 | 2.30 | 0.960 |
| | | No | 51 (83.7) | 65.7 | | 2.29 | |

PGY, post-graduate year; [a] Percentage of 14 true or false questions answered correctly; [b] Mean score of four multiple-choice questions answered correctly; [c] Mann-Whitney test was used to calculate significant differences.

| Table 2. Self-reported practices regarding documentation and discharge planning | | | | |
|---|---|---|---|---|
| | **Never** | **Occasionally (< 50 percent)** | **Frequently (> 50 percent)** | **Always** |
| Do you ask about and document a patient's pain on your initial history and physical? | 1 (1.6) | 17 (27.9) | 26 (42.6) | 17 (27.9) |
| Do you ask about and document a patient's pain in your progress notes? | 1 (1.6) | 9 (14.8) | 40 (65.6) | 11 (18.0) |
| When documenting pain, do you use a pain scale (e.g., 1 to 10)? | 3 (4.9) | 20 (32.8) | 29 (47.5) | 9 (14.8) |
| When discharging a patient, do you assess, address, and document their outpatient chronic pain requirements? | 4 (6.6) | 34 (55.7) | 19 (31.1) | 4 (6.6) |
| Percentages appear in parentheses. | | | | |

designed to assess basic principles of opioid conversion and dosage, and the scenarios and opioid agents used were appropriate to our institution.

- Self-perception regarding analgesic training and competence: Residents indicated whether they considered themselves competent and adequately trained in pain management, and specified situations in which they believed they had received their most beneficial training.

### Data analysis

Knowledge scores for various subgroups were compared using t-tests or analysis of variance. Differences in scores for opioid conversion skills were measured using the Mann-Whitney test. The above analyses were computed using SPSS version 10.0 (SPSS Inc., Chicago, IL).

## RESULTS

Of 88 eligible residents who received the survey, a total of 61 residents submitted completed questionnaires (69 percent). Relevant demographics are reported in Table 1.

### Pain management practices

As shown in Table 2, documentation of pain is not consistent, and the standardized pain scale appears to be underused. Residents report not consistently addressing issues of pain management when discharging patients.

Residents' choices of analgesic agents for various severities of pain are shown in Figure 1. PCA was reported to be used often by 25 percent of residents. The remainder reported using PCA rarely (64 percent) or having no experience with the technique (12 percent) (Figure 2).

The opioid equivalence table was described by 50 percent of residents as being used routinely (> 50 percent of

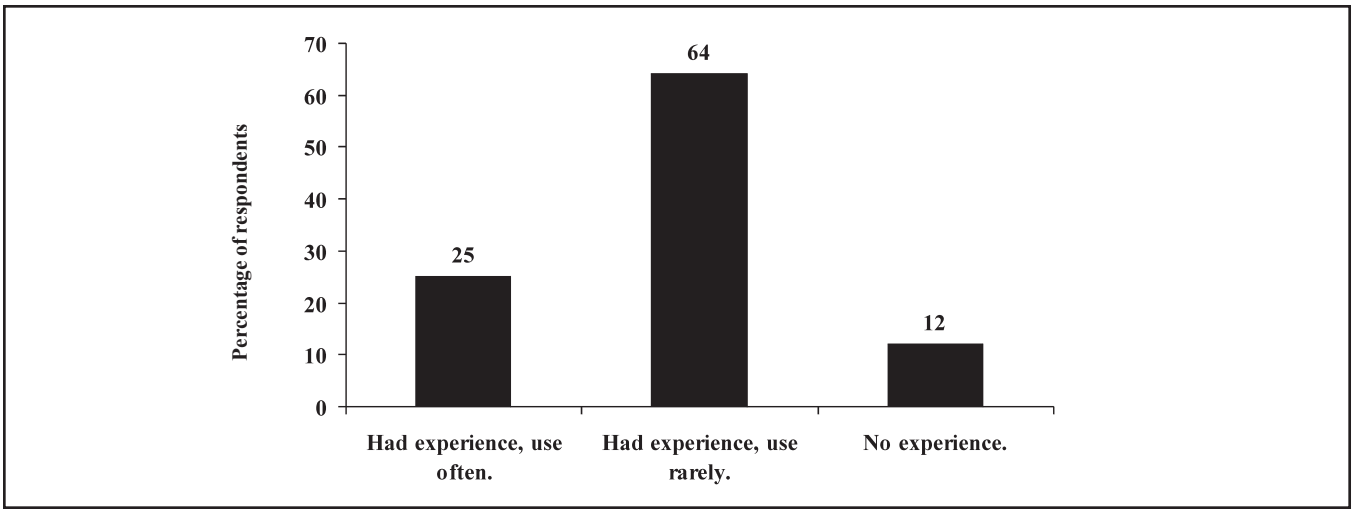


**Figure 2. Reported experience with patient-controlled analgesia.**

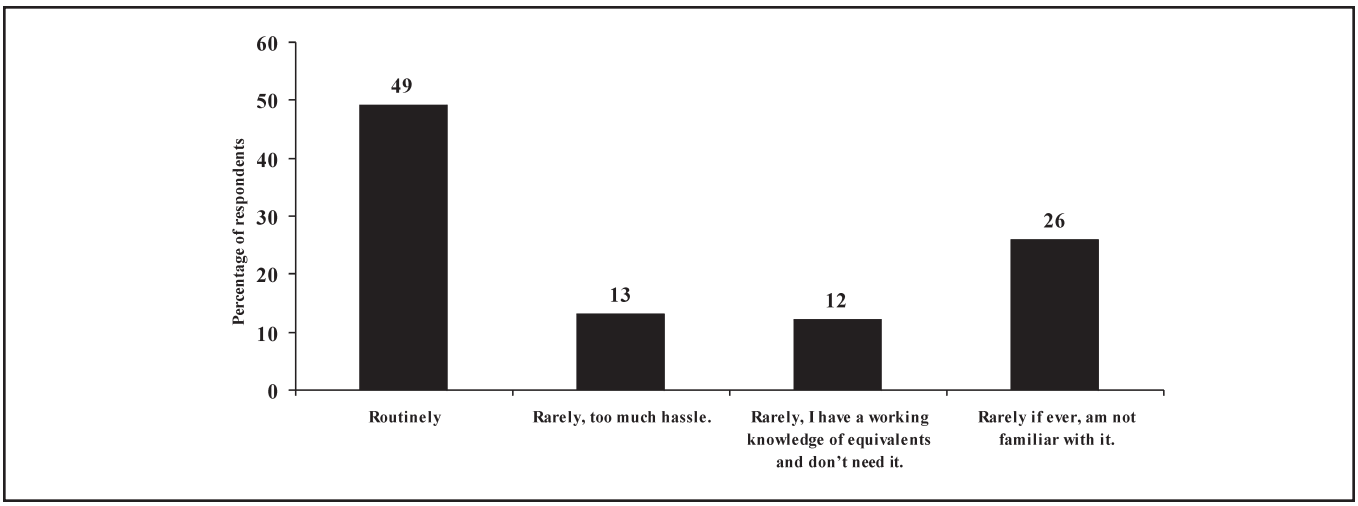


**Figure 3. Reported use of opioid equivalence table.**

the time), whereas the remainder described using it rarely, because it is "too much hassle" (13 percent), because they "don't need it" (12 percent), or because they are not familiar with it (26 percent). (Figure 3).

## Knowledge scores

The mean score for this section (percentage of 14 true-or-false questions answered correctly) was 66.4 percent (standard deviation, 16.5 percent).

Self-perception of adequacy of training and pain management competence were predictors of knowledge (mean scores 72.4 percent vs. 62.4 percent, $p = 0.026$; and 70.9 percent vs. 61.3 percent, $p = 0.038$, respectively). The majority of residents (62 percent) incorrectly believed that psychological dependence on narcotics very frequently results from legitimate prescriptions. The mistaken belief that increased requests for analgesia indicate tolerance, rather than increased underlying pain, was held by 85 percent of residents, and 53 percent of residents did not agree (incorrectly) with the statement that almost all cancer patients should receive opioids for relief of pain.

## Opioid conversion skills

Four multiple-choice questions were administered, each testing one of the following basic aspects of opioid analgesia: knowledge of the relative potency of parenteral to oral morphine, the ability to convert a fixed immediate-release morphine regimen to long-acting morphine, knowledge that oral hydromorphone is considerably more potent than oral morphine, and familiarity with the usual dosing frequency of immediate-release morphine. Only 12 residents answered all questions correctly (20 percent) (Table 3).

Approximately one-half of the residents (51 percent) were unable to convert an intravenous morphine infusion regimen to an equivalent regimen of immediate-release oral morphine, and a majority of residents (59 percent) were unable to make the same conversion to an equivalent regimen of long-acting oral morphine (MS Contin, Purdue Pharma, LP, Stamford, CT) (Table 4).

Opioid conversion skills were significantly better in residents who had completed a dedicated oncology floor month (mean scores, 2.7 vs. 1.86; $p = 0.007$). Residents who reported use of the opioid equivalence table rarely because they were unfamiliar with it performed significantly worse in the opioid conversion skills section when compared to other residents (mean score, 2.58 vs. 1.50; $p = 0.001$). There was no significant difference in opioid conversion skills across program years.

## Reluctance to prescribe opioids

Agreement with six statements included in the survey was indicative of a reluctance to use opioid analgesia for various reasons, notably, concern about addiction and the notion that narcotics should be reserved for severe, cancer-related pain. For each of the statements, Likert scale scores were summed and averaged, such that a score of 1 indicated the least "opioid reluctance" and 7 the most. The statements that generated the highest scores on the "opioid reluctance" scale were those that reflected concern about the risk of addiction. For simplicity, the percentage of respondents agreeing or disagreeing with each statement (1 to 3 signifying agreement, 5 to 7 disagreement, 4 excluded) was also evaluated and is reported in Table 5. Almost one-half (44 percent) of the residents believed that when narcotics are used to control chronic pain, addiction is a common outcome, and 21 percent believed that more than 5 percent of patients who receive narcotics for pain subsequently become addicts. Comparison of "opioid reluctance" scores for

| Table 3. Overall performance in opioid conversion questions | |
|---|---|
| **Opioid conversion skill scores (number of questions answered correctly)** | **Number of residents (percent)** |
| 0 | 2 (3.3) |
| 1 | 14 (23.0) |
| 2 | 21 (34.4) |
| 3 | 12 (19.7) |
| 4 | 12 (19.7) |

various subgroups, notably, gender, year of program, completion of oncology floor rotation, and personal experience of pain, did not reveal any significant differences.

### Subjective perception regarding competence and training

A minority of residents (43 percent) indicated that they considered themselves competent in pain management, and 51 percent did not believe they had received adequate training in pain management (Table 6). The majority of residents (75 percent) believed they had received their best training in pain management during residency. The remainder indicated their best training was received in medical school. Within the former group, 57 percent specified the oncology rotation as their most valuable learning experience. Only four residents (7 percent) reported that they had received their best training in analgesia from formal academic conferences.

## DISCUSSION

The administration of this comprehensive survey provided insight into existing practical and attitudinal deficiencies in pain management within our residency program. In the area of pain management practice, documentation of pain is unsatisfactory. This result corroborated the findings of a chart review performed at our institution in which consistent daily assessment and documentation of pain was observed in less than 40 percent of the charts.[33] Compliance with the WHO "analgesic ladder" principles is generally satisfactory, although a tendency to prescribe less-potent agents than is appropriate is noted.

Residents who reported not using an opioid conversion table because they were unfamiliar with this tool predictably performed poorly in the opioid conversion skills section (mean score, 37.5 percent) as compared to other residents (mean score, 64.4 percent). This group represents an obvious target for educational intervention.

The mean score for the 14-question knowledge section was 66.4 percent. There was no significant difference in mean scores when program years were compared, suggesting that the knowledge elements tested by the survey are not addressed by our residency program. Knowledge deficits that emerged included overestimation of the prevalence of addiction and tolerance to opioid analgesia and underestimation of the extent that opioids are indicated in cancer patients. There was strong correlation between residents' knowledge scores and their self-perception of their competence in pain management and the adequacy of their training.

Reluctance to prescribe opioids, or "opiophobia" as it has been called in the literature,[34] is prevalent in healthcare providers and is a significant factor in the undertreatment of pain. We note that a large proportion of residents overestimate the risk of addiction resulting from opioid analgesia. Despite the availability for several years of good evidence to the contrary,[35] misconception regarding the risk of patient addiction remains prevalent and represents a target for education.

Practical competence in the use of opioids was found to be poor, with a prevalence of ignorance about even the rudiments of opioid prescription being unacceptably high. This finding is in keeping with that of previous studies evaluating competence in the practical use of opioid analgesia, wherein medical students and residents

| Table 4. Opioid conversion skill according to key competencies | |
|---|---|
| **Opioid conversion competence** | **Number of residents (percent)** |
| Knowledge of the relative potency of parenteral to oral morphine | 30 (49.2) |
| Ability to convert a fixed immediate-release morphine regimen to long-acting morphine | 25 (41.0) |
| Knowledge that oral hydromorphone is considerably more potent that oral morphine | 34 (55.7) |
| Familiarity with the usual dosing frequency of immediate-release morphine | 51 (83.6) |

| Table 5. Attitudes regarding use of opioids | | | |
|---|---|---|---|
| **Statements indicating reluctance to prescribe opioids** | **Agree (percent)** | **Disagree (percent)** | **"Opiophobia" mean score (1 to 7)** |
| Using narcotics to relieve the pain of benign conditions is ill advised. | 30 | 64 | 1.59 |
| Narcotics should be restricted to the treatment of severe intractable pain. | 12 | 80 | 1.51 |
| Persons who fit the "profile" of a likely drug abuser should never be treated with narcotics. | 8 | 66 | 2.02 |
| Any patient who is given narcotics for pain relief is at significant risk for addiction. | 16 | 82 | 1.41 |
| When narcotics are used to control chronic pain, addiction is a common outcome. | 44 | 51 | 2.59 |
| More than 5 percent of patients who receive narcotics for pain subsequently become addicts. | 21 | 59 | 2.16 |

have performed dismally.[36-38] Neglect in attention to precision in dosage, duration of action, and drug equivalence is unfortunately commonplace in the prescription of narcotic analgesics.

We found no significant difference in opioid conversion skills between residents in different program years. Residents in their third year of the program, despite having two more years of clinical experience, performed no better in this section than the interns.

It was not surprising that residents who had completed a rotation on the oncology floor were significantly more competent that those who had not. During this month, residents have significant exposure to the management of patients with pain and gain considerable experience in the use of opioids. Furthermore, oncology faculty address the issues of pain control more consistently, and with more attention to detail. There is close supervision of the analgesic care of patients, and attention is given to the training of residents in this regard, which does not seem to happen as consistently on the general medicine floors.

These findings are not at odds with residents' own perceptions. The belief of 26 of the residents (43 percent) that their best training in analgesia occurred during the oncology rotation was borne out by performances in the "opioid conversion skills" section of the survey.

Subsequent to the survey, several interventions have been undertaken at our institution. These include a new emphasis on the teaching of opioid skills to residents on the floor in the context of real patient care; the issuing of laminated "pain management cards" with an opioid conversion table to all residents and instruction in its use; dedicated lunchtime conferences during which case scenarios illustrating appropriate attitudes in opioid analgesia and opioid prescribing skills are presented and discussed; and e-mailing of a series of challenging pain management cases to all residents, with prizes awarded for the best answers submitted in response. Lastly, results of the survey were presented at medicine grand rounds, during which its findings were received with keen interest by residents and attending physicians alike.

Consequent to these steps, pain management has become a "talking point" and a focus of academic activity.

| Table 6. Settings (within residency) in which residents believed they had received their most beneficial training in pain management | |
|---|---|
| | **Number of residents (percent)** |
| Oncology rotation | 26 (42.6) |
| ICU rotation | 6 (9.8) |
| Geriatrics rotation | 1 (1.6) |
| Firm conferences | 2 (3.3) |
| Other conferences | 2 (3.3) |
| Electives | 2 (3.3) |
| Handbook | 1 (1.6) |
| GMF | 6 (9.8) |
| Not applicable (best training received during medical school) | 15 (24.6) |
| ICU, intensive care unit; GMF, general medicine floor. | |

This interest and enthusiasm is unprecedented at our institution and will hopefully translate into better care for our patients. Information regarding clinical outcomes of our efforts to date is at this time not available. Nevertheless, despite the absence of this data, we believe that our favorable experience is of interest and has value to anyone involved in a residency program who wishes to take steps to improve house staff competence in the management of pain.

It is well recognized that education and changing of physician attitudes will go only a fraction of the way toward the ultimate goal of bringing about outcome-based improvement in analgesic practice. Furthermore, the effects of educational interventions have too often been shown to be short lived,[39] and changing physician behavior is notoriously difficult.[40,41] Nevertheless, the physician-dependent elements in the broad picture of analgesic care should not be neglected. Evaluation of existing problem areas in the context of a residency program is an appropriate and important first step in planning remedial action.

Further study that evaluates the effect of interventions implemented consequent to the survey (currently ongoing at our institution) is warranted.

## NOTE

*This work has been previously presented at the Pennsylvania Coalition of Internal Medicine, ACP-ASIM, Annual Meeting, 2002 (Poster presentation) and the 36th Annual Meeting of the American Association for Cancer Education, 2002 (Poster presentation). The abstract was published, but not presented, in the Proceedings of the American Society of Clinical Oncology, 2003.*

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## APPENDIX 1 – QUESTIONNAIRE

- ❑ PGY 1 ❑ PGY 2 ❑ PGY 3 ❑ PGY 4
- ❑ Categorical ❑ Transitional ❑ Preliminary
- ❑ Male ❑ Female
- ❑ American graduate ❑ International graduate

Have you completed a rotation in inpatient oncology yet (Tower 8)?

❑ Yes ❑ No ❑ Not applicable

Where have you received your most beneficial and useful training in pain management?

❑ Medical school. ❑ Residency. ❑ Other (specify:)_____

If residency, specify where.

- ❑ In-patient oncology rotation ❑ ICU rotation
- ❑ Geriatrics rotation ❑ Firm conferences
- ❑ Other conferences ❑ Electives (specify:) _____
- ❑ Other (specify:)_____

Have you, or a close family member, ever experienced an acute pain syndrome as a hospital inpatient?

❑ Yes ❑ No

Do you ask about, and document, patient's pain on your initial H and P?

❑ Never ❑ Occasionally (< 50%) ❑ Frequently (> 50%) ❑ Always

Do you ask about, and document, patient's pain in your progress notes?

❑ Never ❑ Occasionally (< 50%) ❑ Frequently (> 50%) ❑ Always

When documenting pain, do you use a pain scale (e.g. 1-10)?

❑ Never ❑ Occasionally (< 50%) ❑ Frequently (> 50%) ❑ Always

When discharging a patient, do you assess, address and document their outpatient chronic pain requirements?

❑ Never ❑ Occasionally (< 50%) ❑ Frequently (> 50%) ❑ Always

The following would be my first choice in prescribing for an inpatient with moderate pain (4-6/10);

- ❑ NSAID alone ❑ Acetaminophen alone
- ❑ Acetaminophen/opioid combination (e.g. Tylenol #2)
- ❑ Oral opiate. ❑ Parenteral opiate
- ❑ Other (specify:)_____

The following would be my first choice in prescribing for an inpatient with severe pain (7-10/10);

- ❑ NSAID alone ❑ Acetaminophen alone
- ❑ Acetaminophen/opioid combination (e.g. Tylenol #2)
- ❑ Oral opiate. ❑ Parenteral opiate
- ❑ Other (specify:)_____

With regard to patient controlled analgesia (PCA);

- ❑ I have had experience with it, am 'comfortable' prescribing it, and use it often.
- ❑ I have had some experience with it, but am not 'comfortable' prescribing it, and use it rarely, if ever.
- ❑ I have had no experience with it.

When prescribing or changing opiate analgesia regimens, I use an opiate equivalence table;

- ❑ Routinely.
- ❑ Rarely, too much hassle.
- ❑ Rarely, I have a working knowledge of equivalents and don't need it.
- ❑ Rarely if ever, am not familiar with it.

For each of the following statements indicate your opinion by placing a number (1-7) in the box adjacent to it.

1 Strongly agree 2 Generally agree 3 Agree somewhat 4 Neither agree nor disagree
5 Disagree somewhat 6 Generally disagree 7 Strongly disagree

- ❑ I believe I have received adequate training in pain management.
- ❑ I consider myself competent in pain management.
- ❑ Narcotics should be restricted to the treatment of severe intractable pain.
- ❑ Persons who fit the 'profile' of a likely drug abuser should never be treated with narcotics.
- ❑ Using narcotics to relieve the pain of benign conditions is ill-advised.
- ❑ Any patient who is given narcotics for pain relief is at significant risk for addiction.
- ❑ When narcotics are used to control chronic pain, addiction is a common outcome.
- ❑ More than 5 percent of patients who receive narcotics for pain subsequently become addicts.
- ❑ Almost all pain can be relieved with treatment.
- ❑ The majority of patients having chronic pain are undermedicated.
- ❑ Psychological dependence on narcotics very frequently results from legitimate prescriptions.
- ❑ Suicide with an overdose of narcotics prescribed for pain occurs very frequently.
- ❑ The best judge of pain intensity is the patient.
- ❑ The healthcare provider is the best judge of pain intensity.
- ❑ Pain in a cancer patient is most likely due to treatment.
- ❑ The tumor itself is most likely the cause of pain in the cancer patient.
- ❑ Pre-existing conditions not related to the cancer cause the most pain for cancer patients.
- ❑ Increasing requests for analgesics indicate unrelieved pain.
- ❑ Increasing requests for analgesics indicate tolerance to the analgesic.
- ❑ Almost all cancer patients suffer pain.
- ❑ Almost all cancer patients should receive opiates to relieve pain.
- ❑ Patients on opiate analgesia will almost always require laxatives to prevent opiate-induced constipation.

A patient receiving a morphine IV infusion @ 2.5 mg/hr is to be changed to oral analgesia with equivalent analgesic dosage.
For each of the following drugs, what would be the most appropriate dosage regimen;
Please attempt all questions.

NB. DO NOT USE ANY REFERENCES.

Oral morphine:

- ❑ 10 mgs q4h.
- ❑ 15 mgs q4h.
- ❑ 30 mgs q4h.
- ❑ 45 mgs q4h.

MSContin (extended release morphine):

- ❑ 20 mgs q8h.
- ❑ 15 mgs q12h
- ❑ 30 mgs q12h.
- ❑ 90 mgs q12h.

Dilaudid (hydromorphone, oral):

- ❑ 2 mgs q4h.
- ❑ 8 mgs q4h.
- ❑ 30 mgs q4h.
- ❑ 45 mgs q12h.

Usual dosing frequency for morphine (immediate release) is:

- ❑ Hourly.
- ❑ q3-4h.
- ❑ q6-8h.
- ❑ q12h.